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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,321

08/23/2005

Per Mansson

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BACON & THOMAS, PLLC

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EXAMINER

JUNG, UNSU

ART UNIT

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1641

MAIL DATE

DELIVERY MODE

06/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,321	Applicant(s) MANSSON ET AL.	
	Examiner UNSU JUNG	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendments in the reply filed on March 23, 2009 have been acknowledged and entered. The reply included cancellation of claims 10-14 and addition of new claims 35-37.

Status of Claims

2. Claims 35-37 are pending and are under consideration for patentability under 37 CFR 1.104.

Priority

3. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) is acknowledged. The current application is a national phase under 35 U.S.C. 371 of PCT International Application No. PCT/SE03/01038, which has an international filing date of June 18, 2003, which claims benefit of U.S. Provisional Application Ser. No.'s 60/389,492 filed June 19, 2002 and 60/389,493 filed June 19, 2002.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copies of SWEDEN 0201877-8 filed June 19, 2002 and SWEDEN 0201876-0 filed June 19, 2002 has been filed in the instant Application.

Rejections Withdrawn

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4. The following prior art and provisional double patenting rejections have been withdrawn in view of cancelled claims 10-14 in the reply filed on March 23, 2009:

- Rejection of claim 10 under 103(a) as being unpatentable over Karube et al. (U.S. Patent No. 4,789,804, Dec. 6, 1988) in view of Gårdhagen et al. (U.S. Patent No. 6,192,766 B1, Feb. 27, 2001), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), and constructing a formerly integral structure in various elements involves only routine skill in the art;
- Rejection of claims 11-13 under 35 U.S.C. 103(a) as being unpatentable over Karube et al. (U.S. Patent No. 4,789,804, Dec. 6, 1988) view of Gårdhagen et al. (U.S. Patent No. 6,192,766 B1, Feb. 27, 2001), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), and constructing a formerly integral structure in various elements involves only routine skill in the art, and further in view of Takeuchi et al. (U.S. Patent No. 6,326,563, Filed Sept. 22, 1999);
- Rejection of claim 14 under 35 U.S.C. 103(a) as being unpatentable over Karube et al. (U.S. Patent No. 4,789,804, Dec. 6, 1988) in view of Gårdhagen et al. (U.S. Patent No. 6,192,766 B1, Feb. 27, 2001), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), constructing a formerly integral structure in various elements involves only routine skill in the art, and Takeuchi et al. (U.S. Patent No. 6,326,563, Filed Sept. 22, 1999), and further in view of Ricchio et al. (U.S. Patent No. 5,130,095, July 14, 1992);

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- Provisional rejection of claims 10, 12, and 13 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-47 of copending Application No. 10/539,065 in view of Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), and constructing a formerly integral structure in various elements involves only routine skill in the art; and
- Provisional rejection of claim 14 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-47 of copending Application No. 10/539,065 in view of Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), and constructing a formerly integral structure in various elements involves only routine skill in the art, and further in view of Ricchio et al. (U.S. Patent No. 5,130,095, July 14, 1992).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

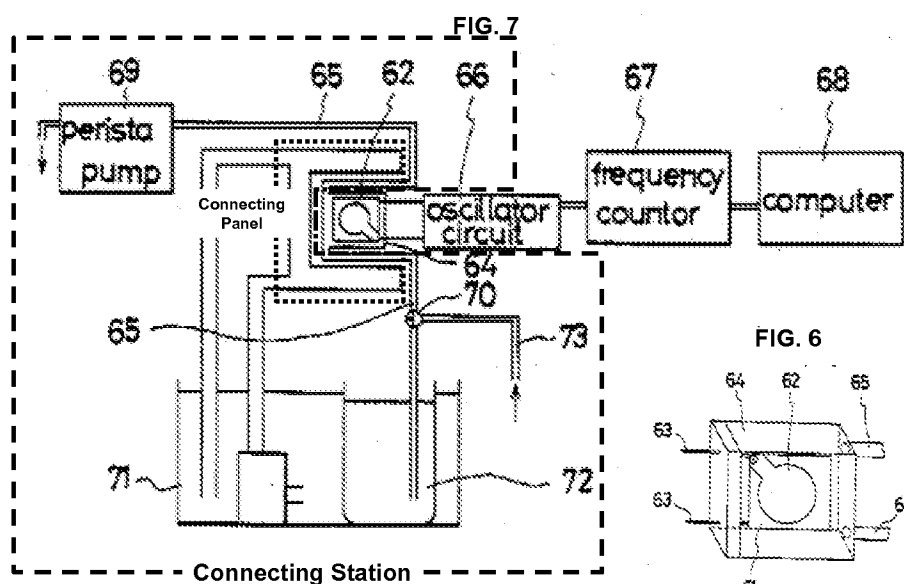
7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 35-37 are rejected under 103(a) as being unpatentable over Karube et al. (U.S. Patent No. 4,789,804, Dec. 6, 1988) (hereinafter "Karube") in view of Gårdhagen et al. (U.S. Patent No. 6,192,766 B1, Feb. 27, 2001) (hereinafter "Gårdhagen"), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), Takeuchi et al. (U.S. Patent No. 6,326,563, Filed Sept. 22, 1999) (hereinafter "Takeuchi"), Ricchio et al. (U.S. Patent No. 5,130,095,

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July 14, 1992) (hereinafter "Ricchio"), and constructing a formerly integral structure in various elements involves only routine skill in the art.

Karube teaches a multiple piezoelectric crystal microbalance device (see entire document, particularly Fig.'s 1-3, 6, 7, 14, and 16). For clarity, the following annotated Fig.'s 6 and 7 of Karube are used to refer to different components of the claimed invention.



The device of Karube includes a connecting station (see annotated Fig. 7 above) for receiving and an individually operating array of piezoelectric crystal microbalances (column 9, lines 12-22). The connecting station of Karube includes a connecting panel having an array of cell connecting receptors (see annotated Fig. 7 above), each cell connecting receptor comprising a receptor connector portion for automatic mating operative engagement with a cell connector portion of a piezoelectric crystal

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microbalance flow-through cell (Fig. 6) upon plugging the flow through cell into the connecting station. Each receptor connector portion comprises a pair of electric connecting ports (reference elements 63 in Fig. 6) for communication with a power and measurement means (Fig. 16 and column 5, lines 23-49) for oscillating a piezoelectric crystal (reference element 60 in Fig. 6) carrying electrodes (reference element 62 in Fig. 6 and column 5, lines 27-30) in a cell compartment (reference element 64 in Fig. 6) of one operatively engaged flow-through cell and for measuring oscillating characteristics of the piezoelectric crystal; and a pair of fluid connecting ports (reference elements 65 in Fig. 6) for communication with flowing means for flowing a solution (column 5, lines 39-49).

With respect to the limitation of “for communication with flowing means for uninterrupted flowing of a solution (75) and a test solution aliquot (83) to and through the cell compartment,” a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The fluid connecting ports of Karube would be expected to provide uninterrupted flowing of a solution and a test solution aliquot through the cell compartment via flowing means.

With respect to claim 36, Karube teaches a multiple piezoelectric crystal microbalance, wherein the connecting station comprises connection means for serial interconnection for the flowing of the solution and test solution aliquot to and through the cell compartment of the individual cells (Fig. 16).

Although Karube's device includes a connecting station with a pair of fluid connecting ports, the device of Karube differs from the instant claims in that that pair of connecting ports provide flow for the plurality of piezoelectric crystal microbalance flow-through cells instead of having a pair of fluid connecting ports associated with each of the receptor connecting portion for individual piezoelectric crystal microbalance flow-through cells.

Karube further fails to teach a multiple piezoelectric crystal microbalance device, wherein the individually operated piezoelectric crystal microbalances are electrostatically and electromagnetically shielded from each other and further comprising grounding means for electrical grounding of the flow solution and the test solution aliquot to the cell compartment of each of the flow-through cell. The current specification discloses that electrostatic and electromagnetic shielding can be provided by enclosing an individually operated piezoelectric crystal microbalance with a metal (p14, lines 6-10).

In addition, Karube differs from the claimed invention in that Karube fails to teach that the plurality of piezoelectric crystal microbalance flow-through cells is individually detachable.

With respect to claims 35 and 37, Gårdhagen teaches that a piezoelectric determination of analytes using biosensor flow cells (see entire document, particularly column 5, lines 15-30). Gårdhagen further teaches a multisensor system such as parallel biosensor flow cells can be arranged to have an array of flow cells having inlets and outlets (column 5, lines 32-36).

Thorne teaches a microtitration plates with wells, which are individually removable/detachable (see entire document, particularly column 1, lines 19-59). Plates with integrated wells lack versatility (column 1, lines 19-21). Individually removable wells can be pretreated with different test combinations for different assays. Further, the removable wells enable the tray to be made of a less expensive material than that of the wells, thereby decreasing its expense as compared with those plates with integrated wells.

Takeuchi teaches a method of shielding by coating a piezoelectric element with a conductive material such as a metal (see entire document, particularly column 17, lines 29-35). A shield layer consisting of a conductive material reduces external electromagnetic noise and improves measurement sensitivity of the piezoelectric element (column 6, lines 5-9).

Ricchio teaches a flow cell having a solution grounding means on the inlet line for the sample adjacent to the entrance to the flow cell of fluid thereby minimizing electronic noise (see entire document, particularly, Abstract).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to modify the device of Karube to have individual flow cells with a pair of fluid connecting ports (inlet and outlet) as taught by Gårdhagen in order to allow parallel flow to the plurality of piezoelectric crystal microbalance flow-through cells. The parallel flow configuration is advantageous since the parallel flow configuration allows simultaneous processing of multiple test samples with a reasonable expectation of success.

In addition, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to modify the multiple piezoelectric crystal microbalance device of Karube so that the plurality of piezoelectric crystal microbalance flow-through cells are detachable/removable from its base plate holding the array since Thorne teaches that arrays with individually removable wells/reaction cells are advantageous because of their versatility. Further advantage of reducing expense by fabricating the arrays using less expensive material for the base/tray provides further motivation to combine teachings of Karube in view of Gårdhagen and Thorne with a reasonable expectation of success. Moreover, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the multiple piezoelectric crystal microbalance device of Karube in view of Gårdhagen so that the plurality of piezoelectric crystal microbalance flow-through cells are detachable/separable, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961) (The claimed structure, a lipstick holder with a removable cap, was fully met by the prior art except that in the prior art the cap is “press fitted” and therefore not manually removable. The court held that “if it were considered desirable for any reason to obtain access to the end of [the prior art’s] holder to which the cap is applied, it would be obvious to make the cap removable for that purpose.”). See MPEP § 2144.04.

Further, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to include in the multiple piezoelectric crystal microbalance

device of Karube in view of Gårdhagen and Thorne with a shield layer consisting of a conductive material such as metal as taught by Takeuchi in order to reduce external electromagnetic noise and improve measurement sensitivity of the piezoelectric element. The advantage of reducing external electromagnetic noise provides the motivation to combine teachings of Karube in view of Gårdhagen and Thorne and Takeuchi with a reasonable expectation of success as the reduction in external electromagnetic noise would provide enhanced measurement sensitivity of the piezoelectric element in the multiple piezoelectric crystal microbalance devices.

Finally, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to employ the grounding means on the inlet line of the flow cell device as taught by Ricchio in the multiple piezoelectric crystal microbalance device of Karube in view of Gårdhagen, Thorne, and Takeuchi in order to minimize electronic noise. The advantage of minimizing electronic noise provides the motivation to combine teachings of Karube in view of Gårdhagen, Thorne, and Takeuchi and Ricchio et al. with a reasonable expectation of success.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Copending Application 10/539,065

A. Claims 35-37 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-47 of copending Application No. 10/539,065 in view of Kawakami et al. (U.S. Patent No. 5,728,583, Mar. 17, 1998) (hereinafter "Kawakami"), Thorne (U.S. Patent No. 4,154,795, May 15, 1979), Ricchio (U.S. Patent No. 5,130,095, July 14, 1992), and constructing a formerly integral structure in various elements involves only routine skill in the art.

The copending Application recites a detachable piezoelectric crystal microbalance comprising:

- a connecting panel (112, 113) having a cell connecting receptor (118), each receptor comprising a receptor connector portion (120) for mating operative engagement with a cell connector portion (24) of each piezoelectric crystal microbalance flow-through cell (10), wherein each connector portion comprises a pair of electric

connecting ports (126, 128) for communication with a power and measurement means (130) for oscillating a piezoelectric crystal (50) carrying two electrodes (56, 62) in a cell compartment (34) of one operatively engaged flow-through cell (10) and for measuring oscillating characteristics of the piezoelectric crystal and

- a pair of fluid connecting ports (122, 124) for communication with flowing means for flowing a solution (75) and a test solution aliquot (83) to and through the cell compartment.

However, the copending Application fails to recite a sensor system comprising an array of piezoelectric crystal microbalances, wherein the plurality of piezoelectric crystal microbalance flow-through cells is individually detachable. The copending Application further fails to recite a multiple piezoelectric crystal microbalance device, further comprising grounding means (108) for electrical grounding of the flow solution (75) and the test solution aliquot (83) to the cell compartment (34) of each of the flow-through cell (10).

Kawakami teaches a flow cell apparatus having an array of plate-shaped quartz oscillator (piezoelectric crystal microbalance) with a protein layer as a measuring element to detect adhesion of blood component on the protein layer (see entire document, particularly Abstract). Kawakami et al. teaches a flow connection in both parallel (column 8, lines 32-34) and serial (Fig. 9) manner. Different samples can be supplied using a parallel flow connection (Example 1),

while serial flow connection would require only a single pump to deliver one type of blood sample to all the flow cells in an array (Fig. 9 and column 8, lines 38-40).

Thorne teaches a microtitration plates with wells, which are individually removable/detachable (see entire document, particularly column 1, lines 19-59). Plates with integrated wells lack versatility (column 1, lines 19-21). Individually removable wells can be pretreated with different test combinations for different assays. Further, the removable wells enable the tray to be made of a less expensive material than that to the wells, thereby decreasing its expense as compared with those plates with integrated wells.

Ricchio et al. teaches a flow cell having a solution grounding means on the inlet line for the sample adjacent to the entrance to the flow cell of fluid thereby minimizing electronic noise as set forth above.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to modify the multiple piezoelectric crystal microbalance device of the copending application so that the plurality of piezoelectric crystal microbalance flow-through cells are detachable/removable from its base plate holding the array since Thorne teaches that arrays with individually removable wells/reaction cells are advantageous because of their versatility. Further advantage of reducing expense by fabricating the arrays using less expensive material for the base/tray provides further motivation to modify the device of copending application as taught by Thorne with a reasonable expectation of success.

Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the multiple piezoelectric crystal microbalance device of the copending application in view of Kawakami so that the plurality of piezoelectric crystal microbalance flow-through cells are detachable/separable, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961) (The claimed structure, a lipstick holder with a removable cap, was fully met by the prior art except that in the prior art the cap is “press fitted” and therefore not manually removable. The court held that “if it were considered desirable for any reason to obtain access to the end of [the prior art’s] holder to which the cap is applied, it would be obvious to make the cap removable for that purpose.”). See MPEP § 2144.04.

In addition, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to employ the grounding means on the inlet line of the flow cell device as taught by Ricchio et al. in the multiple piezoelectric crystal microbalance device of the copending Application in view of Kawakami and Thorne in order to minimize electronic noise. The advantage of minimizing electronic noise provides the motivation to combine teachings of the copending Application in view of Kawakami and Thorne and Ricchio et al. with a reasonable expectation of success.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

11. Applicant's arguments with respect to claims 35-37 have been considered but are moot in view of the new ground(s) of rejection. However, the following arguments have been addressed as they may apply to the current grounds of rejection.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant's argument that there is no reason for expectation of providing uninterrupted flowing of a solution and a test solution aliquot through the cell compartment via flowing means has been fully considered but is not found persuasive essentially for the reasons of record. As state in the previous Office Action dated November 21, 2008 (see p7, item 8), the limitation of "for communication with flowing means for uninterrupted flowing of a solution (75) and a test solution aliquot (83) to and through the cell compartment" is a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

The fluid connecting ports of Karube would be expected to provide uninterrupted flowing of a solution and a test solution aliquot through the cell compartment via flowing means since the fluid connecting ports of Karube meets all the structural limitations of the claimed invention.

In response to applicant's argument that there is no suggestion/motivation to combine the Karube and Gårdhagen, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the previous Office Action dated November 21, 2008 (see item 8) states that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to modify the device of Karube to have individual flow cells with a pair of fluid connecting ports (inlet and outlet) as taught by Gårdhagen in order to allow parallel flow to the plurality of piezoelectric crystal microbalance flow-through cells. The parallel flow configuration is advantageous since the parallel flow configuration allows simultaneous processing of multiple test samples with a reasonable expectation of success. Therefore, the advantage of allowing simultaneous processing of multiple test samples provides the motivation to combine teachings of Karube and Gårdhagen with a reasonable expectation of success.

Applicant's argument that there is no explanation as to why individually removable wells/reaction cells would be less expensive than an integrated format has been fully considered but is not found persuasive essentially for the reasons of record. As stated in the previous Office Action dated November 21, 2008 (see item 8), Thorne teaches a microtitration plates with wells, which are individually removable/detachable (see entire document, particularly column 1, lines 19-59). Plates with integrated wells lack versatility (column 1, lines 19-21). Individually removable wells can be pretreated with different test combinations for different assays. Further, the removable wells enable the tray to be made of a less expensive material than that of the wells, thereby decreasing its expense as compared with those plates with integrated wells. Therefore, a device, in which the wells/reaction cells are integrated, lacks versatility. In the integrated device, the fabrication cost of making the device cannot be reduced by using less expensive material for different parts as the device is made as one piece. In contrast, a device, in which the wells/reaction cells are individually separable, the material for the base/tray holding the reaction cells may be different than the material needed for the reaction cells. Thorne teaches that a less expensive material can be used to fabricate the base/tray of the device.

Applicant's argument that the relationship of the prior art to the claimed invention in the present application are not sufficiently similar to those in the *In re Dulberg* decision for it to be render obviousness of the presently claimed invention has been fully considered. However, this argument is not found persuasive because applicant fails to provide specific reasons for stating that the facts with respect to the relationship of the

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prior art to the claimed invention in the present application are not sufficiently similar to those in the *In re Dulberg* decision. The court has held that constructing a formerly integral structure in various separate elements normally require only ordinary skill in the art and hence are considered routine expedients. As set forth above, Karube differs from the claimed invention in that Karube fails to teach that the plurality of piezoelectric crystal microbalance flow-through cells is detachable. Although the claimed structure of *In re Dulberg* (lipstick holder with a cap) is different from the currently claimed multiple piezoelectric crystal microbalance device, the facts in *In re Dulberg* are sufficiently similar since the prior art teachings of Karube in view of Gårdhagen teaches all the elements of multiple piezoelectric crystal microbalance device except that the plurality of piezoelectric crystal microbalance flow-through cells are detachable or separable. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the multiple piezoelectric crystal microbalance devices of Kawakami so that the plurality of piezoelectric crystal microbalance flow-through cells are detachable/removable, since it has been held that constructing a formerly integral structure in various/separable elements involves only routine skill in the art. See MPEP § 2144.04.

In view of the foregoing response to arguments, the prior art and provisional double patenting rejections set forth above have been maintained.

12. Since the prior art fulfills all the limitations current recited in the claims, the invention as currently recited would read upon the prior art.

Conclusion

13. No claim is allowed.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to UNSU JUNG whose telephone number is (571)272-8506. The examiner can normally be reached on M-F: 9-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Unsu Jung/
Unsu Jung
Primary Examiner
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